Natural England Board

Meeting 7
10 October 2007

Paper No: **NEB P07 29**

Title: **Natural England's Policy Position on Flooding: Pre scoping paper on principles**

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1. Purpose

1.1 The purpose of the paper is to provide the Board with an overview of the potential scope of Natural England's policy position in relation to flooding and flood risk management.

2. Recommendation

2.1 It is recommended that the Board:

- Discuss and agree the key principles underlying the potential scope of our policy position set out below.

3. Background

Note: Electronic versions of this paper have a number of links to the internet which show as blue in the text.

3.1 The recent floods in Sheffield, Hull, Torquay and the Thames and Severn Valleys have given rise to a Government inquiry, chaired by Sir Michael Pitt, and another by the House of Commons EFRACOM, to which we have submitted written evidence. The focus of these inquiries is on the adequacy of flood defences and the response to these emergencies, including the organisational aspects.

3.2 The increasing frequency of severe rainfall events (and more floods are forecast for the autumn) mean that we have to adapt in the face of climate change. The traditional methods of flood defence - building concrete and earth embankments - may not be adequate or sustainable. Flooding events have implications for habitats, species and ecosystems and, therefore, for the full range of Natural England's activities. This points to a need for us to develop our policy thinking on these issues and this paper seeks to engage the Board in consideration of the principals that would need to underlie any policy position.

3.3 An innovation fund of £1.5 m over 3 years has been set up by Defra. Natural England is on the Steering Group. The first six projects supported by the Fund were announced in January 2007. They included 'development of an educational tool for shoreline management', 'farming floodplains for the future

in Staffordshire', 'restoring floodplain woodland for flood alleviation' by the Forestry Commission and a study on ways of integrating ecology and sustainable flood-risk management into the planning for the Thames Gateway. As a separate initiative, Natural England is leading a project with the Association of Drainage Authorities to develop Biodiversity Guidelines for Internal Drainage Boards.

3.4 A special research project (FD 2114) has been undertaken by the Environment Agency (EA) and Defra with involvement from Natural England. The conclusion from the current evidence - mainly from small-scale experiments is that land-use changes (to grazing, cultivation, underdrainage, woodland cover) can significantly reduce run-off at a localised catchment scale, but the extent to which they could mitigate flooding in larger catchment situation has not been demonstrated.

3.5 *Taking forward a new Government Strategy for flood and coastal erosion risk management in England* is the Government's response in 2005 to the consultation exercise on *Making Space for Water*. It announced the intention to pursue a more strategic approach, and move to a wider portfolio of responses to flood risk. These would include greater use of rural land-use solutions, such as creation of wetlands and washlands, coastal realignment, river corridor widening and river restoration.

3.6 Despite the benefits outlined in *Making Space for Water* (see below), integrated schemes at a catchment, estuary or coastal cell level remain a rarity. The successful realignment scheme on the Humber estuary is an exception. We need to understand the reasons for inaction on sustainable approaches, so that we can propose appropriate action. These are explored in Option 1.

3.7 The Environment Agency has powers to undertake flood-defence works on 'main rivers' and, at the coast, to reduce flooding from the sea. It has a duty to operate flood-warning systems, but none to provide protection from flooding. It is funded by block grant (since 2006) from Defra: £436m in 2007-08 rising to £800m in 2010. Other flood-risk management 'operating authorities' include Internal Drainage Boards and local authorities, though these have grants of less than £10m.

3.8 Up to 2006, decisions were made by Defra on the capital schemes proposed by the EA's Regional Flood Defence Committees. As a consultee on all schemes and strategies, Natural England has agreed with the EA that there will be a six-monthly forward look at proposed schemes at regional level, to identify those in which we would take a deeper interest.

3.9 Defra announced a new policy on 1 April 2004 on the *Maintenance of uneconomic sea defences* with a rationale for abandoning those sea walls which are unsustainable. This would be done by the EA through its Shoreline Management Plans. The assessment has since been extended by the EA to inland flood defences. The EA is also completing a programme of Catchment Flood Management Plans (with input from Natural England), which are meant to take a holistic view of flood risk and solutions within major catchments. The EA website states "the best way to reduce the risk of flood is to focus on ways that work with nature, not against it, such as constructing flood barriers".

3.10 In 2006, the Government issued PPS 25 on *Development in flood risk areas*. This advises planning authorities to ensure that development is directed away from areas at highest risk. It also urges authorities to use the opportunities offered by new development to create 'green' infrastructure and to set back defences.

4. Issues

4.1 Natural England submitted advice to the current Efra Select Committee Inquiry into the summer floods. Our written evidence is attached at Annex 1. We have alerted the Committee to the possibility that we may wish to submit further evidence in the light of the Board's discussion of this paper.

4.2 Natural England's locus for submitting evidence to this Inquiry and for developing our thinking on flooding as an issue arises from our responsibilities for the conservation, protection and enhancement of the natural environment. In order to develop a robust policy position on this issue, we are inviting the Board to consider the following principles that should underpin any potential policy:

- We support the emphasis in Making Space for Water on natural processes and ecosystem function;

- Support for managed realignment in both coastal and fluvial environments;

- We support the need for catchment scale solutions and whilst we acknowledge that the evidence of their ability to deliver significant flood risk mitigation in urban situations is not yet certain;

- Flood risk management needs to be addressed as part of a package of levers to deliver the optimum mix of public benefits for people now and in the future. Including opportunities for wetland restoration and the recreation of important habitats (e.g. traditional water meadows) and benefits for particular species;

- In adopting such an approach, we need to recognise the legitimate needs of communities already existing in flood plains and support the removal of critical assets (e.g. electricity supply substations and water treatment works);

- The Habitats Directive already provides a mechanism for advancing this case, but Natural England and its partners will need to be bolder in both making the case and seeking innovative solutions which could lead us to seek amendments to habitats regulations in the forthcoming review;

- The land use planning system needs to ensure that new development is appropriately located in relation to flood plains and eroding coasts: and provide the space for natural processes to function and managed realignment to be a realistic opportunity.

Annex 1

House of Commons EFRACOM
Inquiry into Flooding

Submission by Natural England
(ref 07/08- 60)

Executive summary

1. Increasing frequency of severe rainfall events and rising sea levels due to climate change, mean that we have to adapt our approach to flood defence. Traditional methods - building concrete and earth embankments - may no longer be adequate or sustainable.

2. Natural England's view is that multi-objective schemes at the level of catchments, estuaries and coastal cells, which work with - rather than against - natural processes, should be more widely implemented through the Environment Agency's flood-risk management programme. Integrated schemes, which take account of catchment functioning, bring added benefits to biodiversity, landscape and amenity, pollution reduction and carbon storage.

3. River restoration, floodplain storage, blocking of moor grips and re-alignment of defences are key elements of a catchment approach. Natural England is participating in pilot projects on these separate elements. Appropriate land management and drainage systems are important in reducing run-off and soil erosion.

4. Catchment measures are unlikely to prevent the sort of unprecedented floods that have occurred recently (1 in 1,000 year events), though they should reduce their intensity and impact. In these circumstances, adaptation becomes important. The flood management capital programme should include funding for adaptation measures (e.g. as well as moving assets, such as water-treatment plants and vulnerable dwellings, out of areas of high flood risk). Planning control needs to be more robust in refusing inappropriate new build in these areas (in accordance with *Planning Policy Statement 25*).

5. Natural England fully supports the Government's policy, as expressed in its response to *Making Space for Water* (2005), to pursue a more strategic approach, and move to a wider portfolio of responses to flood risk - with greater use of rural land-use solutions, such as creation of wetlands and washlands, coastal realignment, river-corridor widening and river restoration.

6. Shoreline Management Planning (SMP) was formally introduced in 1995 and Catchment Flood Management Planning (CFMP) in 2002, but we are disappointed that there has been very little action on the ground in terms of integrated flood management schemes. Managed re-alignment of sea defences in the Humber Estuary, completed in 2006, is the only example of a strategic-scale flood management scheme. We explore the reasons for inaction on sustainable approaches and propose the following action:

6.1 Deadlines should be set for implementation of integrated schemes identified in SMPs and CFMPs, and of the policy to withdraw maintenance of uneconomic defences announced in 2004;

6.2 A significant proportion of the EA's flood-risk management budget should be earmarked for 'sustainable' schemes; and

6.3 Projects under Defra's *Making Space for Water* should be prioritised, and those informing 'integrated schemes' should be completed and put into practice within the next year.

Introduction

7. Natural England is a statutory body created in 2006 under the Natural Environment and Rural Communities Act by bringing together English Nature and parts of the Rural Development Service and the Countryside Agency. Natural England has been charged with the responsibility to ensure that England's unique natural environment, including its flora, fauna, land and seascapes, geology and soils are protected and improved. Natural England's purpose, as outlined in the Act, is to ensure that the natural environment is conserved, enhanced and managed for the benefit of present and future generations, thereby contributing to sustainable development.

Impacts of climate change and intensive land use

8. More intensive rainfall at different times of the year, including the summer, is leading to flash flooding. Rainfall runs off drained upper catchments, with soils compacted by intensive stocking of sheep, and removes topsoil from the ploughed soils of river valleys. The soil ends up as silt in streams, rivers and lakes, reducing their biodiversity and water-conveyancing capacity. Run off follows drainage systems through farmed fields, along tracks and roads - normally discharging into streams and rivers. In urban areas, water runs off concrete and paved surfaces, and can overload drainage systems.

9. At the coast, sea-level rise is exacerbated by melting of ice caps and glaciers, caused by global warming. Intertidal habitats, such as saltmarsh which can absorb wave action, are squeezed in front of sea-defences. In Essex alone, 50 hectares of saltmarsh are lost to coastal squeeze every year.

Impacts of flooding on the natural environment

10. In Natural England's view, undue emphasis has been placed on possible harmful effects of flooding on the natural environment, often to justify building new or higher flood-defence structures, which are likely to be damaging to the natural functioning of ecosystems. Some habitats and wildlife have suffered as a result of the recent summer floods (eg the hay meadows in the valley of the Yorkshire Derwent), but this is not due to inadequate flood defences - rather to the habitats having adapted to an embanked river and a system of floodplain drainage channels, with some winter flooding.

11. By their very nature, floodplains evolved to absorb overflow from river channels. Before they were drained for agriculture and urban areas, they were habitats for a rich variety of wetland wildlife. In England, only a few areas of floodplain habitat remain, mostly in nature reserves. Wetland creation projects, such as the Great Fen in Cambridgeshire, are seeking to utilise flood waters to re-wet agricultural land.

A case for developing more sustainable strategies

12. Natural England believes there is a strong case for strategic approaches (at catchment, estuary or coastal-cell level) and integrated flood-risk management schemes that work with natural processes, rather than sole reliance on traditional concrete or earth embankments. In the face of climate change, we advocate adaptation - recognising that locating housing and infrastructure in high flood-risk areas is increasingly unsustainable. The Environment Agency website states "the best way to reduce the risk of flood is to focus on ways that work with nature, not against it, such as constructing flood barriers" - we agree.

13. Land uses and management practices that are 'flood friendly' are usually also beneficial to soil conservation, landscape, biodiversity, woodland management, pollution reduction and carbon storage. They are not a replacement for, but a complement to flood defences protecting particular assets.

Key elements of an integrated approach

14. River restoration: removal of in-channel structures has multiple benefits. A current example is the River Wensum, a European Special Area of Conservation (SAC) in Norfolk, where the removal or lowering of three redundant mill weirs is seen as the most cost-effective solution to flooding problems in the upstream villages. This is also a key step in a river restoration plan for the River Wensum SAC, 67% of which is backed up from such structures. This is the first whole-river restoration strategy in England. It is led by Natural England, in partnership with the Environment Agency and the Norfolk Rivers IDB. It has synergies not only with the flood-management strategy, but also with the Fisheries Action Plan and the Wensum Catchment Sensitive Farming (CSF) project.

15. Morphological impacts are recognised in the Water Framework Directive, and a programme of physical restoration on 18 river SACs and SSSIs in England has been costed (at £39m) in the WFD preliminary Cost-Effectiveness Analysis conducted by Defra.

16. Floodplain storage: re-creation of wetlands can, if properly designed, provide increased capacity at times of peak floods and help protect urban areas. The benefits of floodplain washlands and the requirements for their design were reviewed in English Nature's research report no 598: *Integrated washland management for flood defence and biodiversity* (2004). As wildlife habitat, washlands need to be wet in winter (for wintering wildfowl) and relatively dry in spring and summer (for breeding waders). To provide maximum capacity for flood storage, they should ideally be fairly dry at all times, and any flood water should be routed back into the river as soon as possible. Therefore, the design to meet both functions needs to be deep - or shallow but more extensive. Although there are a few washland creation projects (eg Beckingham Marshes at Gainsborough on the River Trent), it has proved difficult to quantify their benefits in the present flood-risk scheme appraisal system.

17. Natural England is a partner in the *50-year Wetland Vision* project, which is seeking to recreate floodplain wetland habitats - not just washlands - in suitable localities. An example is the Great Fen project, intended to link two National Nature Reserves (Holme Fen and Woodwalton Fen) south of

Peterborough. This will also contribute to the new UK Biodiversity Action Plan (BAP) target to create 8 landscape-scale wetland complexes. The intention is also that the Great Fen should play a role in storing flood water.

18. Blocking of moor grips in upland catchments: drainage of upland blanket bog was facilitated by Government grants between the 1950s and 1980s and exacerbated by moor-burning. This is having a damaging effect on the condition of designated conservation sites and has resulted in a degraded landscape. A recent study in the North Pennines AONB has identified 9,300km of damaging grips, and a total cost of £10million to restore the blanket bog affected. It is estimated that there are over 30,000km of grips above the 200-metre contour in England. A programme of grip-blocking would deliver multiple public benefits by helping to restore biodiversity, reduce run off, improve raw water quality (and thereby reduce the cost of treatment), emphasise the role of land managers as carbon managers and contribute to the Defra 'peat project', being developed as a key part of the Soil Strategy for England.

19. Rainfall runs off quickly through the moor grips and eroded gullies. Sediment is transported into rivers and lakes. Streams and rivers can often be seen discoloured by the concentration of peat in the water. Studies in Upper Wharfedale by the Environment Agency and - as part of a Defra-led partnership - on the streams above Ripon by Natural England, have estimated up to 15% reduction in peak flood flows, by strategic grip-blocking. Successful projects are being undertaken - in the Peak District by *Moors for the Future*, and in the Bowland Fells by United Utilities (in a partnership with Natural England, RSPB and the Environment Agency). Techniques of grip-blocking have improved, and there are some specialist contractors. The HLS stewardship option offers £3.40 per metre of grip blocked, but actual costs vary between £1 and £4.50 per metre, depending on the degree of erosion.

20. The effects of grip blocking on peak flood flows have not yet been demonstrated in large-scale experiments; these would entail flow meters on streams fed from blocked and unblocked grip systems in upland catchments, which is a very expensive monitoring programme - and flood peaks may not occur for another ten years or more. However, grip-blocking has multiple benefits and is worth pursuing as part of an integrated approach to catchment flood-risk management. In particular, upland restoration has the potential to enhance the capacity of the uplands as a major carbon store. We estimate that England's peat uplands currently have the capacity to store 3 billion tonnes, and that restoration of upland peat bogs could save around 0.4million tonnes of carbon per year equivalent to around 2% of the UK's Kyoto commitment.

21. Managed re-alignment at the coast: sea-level rise means that many sea defences (particularly in the south and east, where much land was originally reclaimed from the sea) are unsustainable. This is a viable sea-defence reason for implementing managed re-alignment schemes, which would also achieve the delivery of key biodiversity targets. There is a good example of set back as an integral part of the Environment Agency's flood-risk management strategy for the Humber Estuary (e.g. Alkborough, Paull Holme Strays).

22. Managed re-alignment has been undertaken elsewhere for other reasons (eg at Freiston Shore RSPB reserve on the Wash in 2002 to help meet the Defra

high-level target requirement for EA Flood Risk Management to create 200ha a year of BAP priority habitat, at least half of which should be saltmarsh). The achievement to date has been approximately 50ha a year of saltmarsh creation (100ha a year is lost to 'coastal squeeze'). Set back of defences has also been undertaken at Wallasea Island in Essex, as compensation under the EC Habitats Directive for habitat excluded from protection at Lappel Bank in the Medway.

Adaptation

23. Climate change is posing an increasing challenge to our flood defences. As well as adopting more sustainable land management and a catchment-approach, we also need to adapt to increasing sea-levels and storminess by locating housing and infrastructure outside areas of high flood risk. This will require action by local authorities, public utilities, the Highways Agency and others responsible for authorising or undertaking infrastructure development. The principles are set out in Planning Policy Statement 25- *Development in Flood-risk Areas*, revised in December 2006. Defra is leading a project under *Making Space for Water* to develop an 'adaptation toolkit'.

Government policy

24. Defra has been moving towards a more sustainable flood-management policy over the last two decades. Firstly, the focus of flood defence schemes has moved from agricultural land drainage - which dominated from the 1950s to 1980s - to the protection of lives, property and infrastructure, and a greater emphasis was placed on flood warning. Defra introduced strategic approaches through Shoreline Management Plans (1995) and Catchment Flood Management Plans (2002). In March 2005, they published *Taking forward a new Government Strategy for flood and coastal erosion risk management in England*, as a response to the consultation on *Making Space for Water*. The response announced the intention to pursue a more strategic approach, and move to a wider portfolio of responses to flood risk. These would include greater use of rural land-use solutions, such as creation of wetlands and washlands, coastal realignment, river corridor widening and river restoration. Natural England fully supports this approach to flood-risk management.

25. Since then, Defra has led a programme of 25 projects under the *Making Space for Water* banner and initiated an Innovation Fund of £1.5m over three years to stimulate sustainable approaches. The first six projects to be supported by the Fund were announced in January 2007. They included 'development of an educational tool for shoreline management', 'farming floodplains for the future in Staffordshire', 'restoring floodplain woodland for flood alleviation' by the Forestry Commission and a study on 'ways of integrating ecology and sustainable flood-risk management into the planning for the Thames Gateway'. As a separate initiative, Natural England is leading a project with the Association of Drainage Authorities to develop Biodiversity Guidelines for Internal Drainage Boards.

From policy to implementation - slow progress

26. Despite the policy initiatives outlined above, the integration of strategic and sustainable approaches into the flood-risk management programme is barely in evidence. To most appearances, it is 'business as usual'. Defra perceived

that there were barriers to - and lack of incentives for - implementation of the new policy. They made an assessment of the reasons through a project under *Making Space for Water*. Natural England has contributed to this project. We suggest some possible reasons why there have not been more integrated schemes:

26.1 Schemes need to be devised and proposed. In the case of the Environment Agency, this involves identifying a flood-risk problem, commissioning consultants to develop a solution, and determining priorities for funding through a Regional Flood Defence Committee (which has an inbuilt majority of local authority members). At none of these stages is there any incentive to propose catchment solutions, and very few consultants or flood-defence engineers would feel confident about proposing land management solutions, particularly as they would need to involve other partners at an early stage.

26.2 Hard defences are a tried-and-tested protection against flooding (if built high enough), while catchment solutions are new territory for the flood-defence engineer. Results are likely to be longer-term and may not protect property from the next flood, if that occurs before new processes have had a chance to take effect. Nevertheless, catchment solutions could be used as part of an integrated approach. Some re-training may be desirable, aided by demonstration projects.

26.3 At the coast, set-back of sea defences has been shown to be a viable flood-management option. Although several SMPs include managed re-alignment schemes, there is an apparent reluctance to implement them, because of perceived opposition from local interests. The continued maintenance by the Environment Agency of uneconomic sea walls in Essex, despite the Government's policy announced in April 2004, is a case in point. The Environment Agency recently produced guidelines for withdrawal of maintenance from flood defences - so we hope that action is imminent. Funds saved can be redirected to sustainable approaches.

26.4 The Defra cost-benefit appraisal scheme for capital flood-management schemes - and the way in which the assessment of a scheme is expected to be put together by the Environment Agency - appear to militate against inclusion of sustainable solutions and adaptation to climate change. The appraisal methodology is currently under review. It may become easier to develop an economic case for integrated schemes in future.

26.5 Major changes in the administration and supervision of the flood management capital programme took place soon after the announcement of the *Making Space for Water* policy. In 2006, Defra started to give the Environment Agency a block grant for flood-risk management (£436 million in 2007-08), though it can direct it to spend some of this on particular types of work and still approves schemes over £50 million (one or two a year). Before this, Defra Regional Engineers approved schemes and could reject those that did not include environmental and social elements. As part of downsizing of Defra Flood Management Division, the Regional Offices have been closed. It is imperative that the same strategic overview (economic, technical and environmental) is exercised consistently in all Regions of the Environment Agency.

26.6 There are 25 projects under *Making Space for Water*. Several of them are crucial to the implementation of sustainable approaches to flood-risk

management, including adaptation to climate change. The number of Defra staff working on *Making Space for Water* has been gradually reduced - and key staff members have recently been seconded to working on the Government and EFRACOM inquiries into the handling of the 2007 floods. This, combined with all the other pressures on the funding available to the Environment Agency to play its part in the programme, argues for prioritising those projects which will help to deliver integrated schemes and sustainable solutions.

Recommendations

1. In the light of the slow progress in implementing a strategic and sustainable approach to flood-risk management, Natural England makes the following recommendations:

27.1 Target deadlines should be set for implementation of integrated schemes identified in SMPs and CFMPs, and of the policy to withdraw maintenance of uneconomic defences announced in 2004;

27.2 A significant proportion of the EA's flood-risk management budget should be earmarked for 'sustainable' schemes; and

27.3 The 25 projects under *Making Space for Water* should be prioritised, and those informing 'integrated schemes' should be completed and put into practice within the next 12 months.

NOTE

This response will be discussed by Natural England's Board at their meeting on 10 October. It is possible that we would wish to submit supplementary evidence in light of that discussion.